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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,453	07/03/2001	Teuvo Maunula	003277-025	8362

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EXAMINER

TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/897,453	<b>Applicant(s)</b> MAUNULA, TEUVO	
	<b>Examiner</b> Hien Tran	<b>Art Unit</b> 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-13,20,21 and 27-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-13,20,21 and 27-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/17/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11-12, 20, 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 11, it is unclear as to what structural limitation applicant is attempting to recite; "NOx adsorption catalyst sulfates", "reduction of nitrates", "burning of particles", "lean mixture" and "rich mixture" have no clear antecedent basis. Note that the lean and rich mixture are merely referred to in the preamble of the claim and are not part of the apparatus. Furthermore, claim 11 is an improper dependent claim as it fails to further limit the subject matter of the previous claims. Apparently, claim 11 merely recites process limitation and therefore is not structurally further limiting. See claims 12, 20 likewise.

In claim 12, it is unclear as to what structural limitation applicant is attempting to recite and "duration" has no clear antecedent basis.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1, 5, 8-9, 27-28, 30 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/21647.

With respect to claim 1, WO 00/21647 discloses an apparatus comprising: operational units including: a particle separator 16 and an NOx adsorption catalyst 28 located at the same location as an oxidation catalyst (page 3, line 17 to page 4, line 2).

With respect to claim 5, WO 00/21647 discloses a connecting channel 10.

With respect to claim 8, WO 00/21647 discloses that oxidation catalyst is disposed in the same structure with the separator (page 3, lines 6-15).

With respect to claim 9, WO 00/21647 discloses that the oxidation catalyst contains precious catalyst metal, such as platinum catalytic metal (page 4, lines 1-11, claim 5).

With respect to claims 27, 28, WO 00/21647 discloses that the particle separator 16 also contains catalysts, such as Pt, La (page 3, lines 6-11) which are considered as oxidation catalyst and NOx adsorption catalyst.

With respect to claim 30, the NOx adsorption catalyst in WO 00/21647 further includes a precious catalyst which is effective to promote conversion of HC and CO.

Instant claims 1, 5, 8-9, 27-28, 30 structurally read on the apparatus of WO 00/21647.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 3-4, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/21647.

With respect to the specific arrangement of the units, it would have been obvious to one skilled in the art at the time of the invention was made to select an appropriate arrangement for the units since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to achieve the purification attendant therewith absence showing any unexpected results and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

It should be noted that where the only difference between the prior art and the claims is a recitation of a specific arrangement of the units, and the units having the claimed elements would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device.

8. Claims 6-7, 10, 13, 21, 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/21647 in view of Shinzawa et al (4,887,427) or DE 3,518,756.

With respect to claims 6, 7, 10, 31, 32, the apparatus of WO 00/21647 is substantially the same as that of the instant claims, but is silent as to whether each adsorbent is arranged in an

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exhaust discharge line of each cylinder of the engine and the discharge line being connected to a connecting channel containing the separator and the oxidation catalyst.

However, Shinzawa et al and DE 3,518,756 disclose provision of each exhaust discharge line of each cylinder of the engine has catalyst filter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange a set of operational units in each exhaust discharge line of each cylinder of the engine as taught by either Shinzawa et al or DE 3,518,756 so as to enhance the purification of the system thereof.

With respect to claims 13, 21, WO 00/21647 discloses that the adsorption catalyst comprises platinum and at least one element selected from compounds of alkali metals (Li, Na, etc.), alkaline earth metals (Ba, Ca, etc.) and transition metals (page 3, line 17 to page 4, line 2, claim 2).

9. Claims 11-12, 20, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/21647 in view of Shinzawa et al (4,887,427) or DE 3,518,756 as applied to claim 10 above and further in view of EP 758,713.

With respect to claims 11-12, 20, 33, since these claims are directed to method limitations which are of no patentable moment in apparatus claims, the modified apparatus of WO 00/21647 structurally meets these claims.

In any event, EP 758,713 discloses provision of regeneration of the NO<sub>x</sub> adsorption catalyst by periodically using a lean mixture and a rich mixture (col. 8, line 3 to col. 9, line 12; col. 10, lines 4-6, etc.)

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It would have been obvious to one having ordinary skill in the art to alternately regenerate the NOx adsorption catalyst by periodically using a lean mixture and a rich mixture as taught by EP 758,713 in the modified apparatus of WO 00/21647 so as to reuse the adsorption catalyst.

With respect to the specific ratio, it should be noted that the specific ratio is not considered to confer patentability to the claim. The precise ratio would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed ratio can not be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the ratio in the system to obtain the desired purification thereof (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

#### ***Response to Arguments***

10. Applicant's arguments filed 3/17/04 have been fully considered but they are not persuasive.

Applicant argues that the WO 00/21647 reference discloses an additional fourth catalyst which is not part of the three operational units as recited in the instant claims. Such contention is not persuasive as the term "comprising" opens the instant claim to the inclusion of other catalyst.

Applicant argues that the instant claims propose to use PGMs in the NOx adsorption catalyst while the WO '647 proposes separation of the absorbent and PGMs. Such contention is not persuasive as WO '647 discloses the use of precious metal, e.g. platinum group metal, in the NOx adsorption catalyst (page 3, line 17 to col. 4, line 1).

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Applicant argues that the three-way catalyst of WO '647 is not suitable for oxidation of NO to NO<sub>2</sub>. Such contention is not persuasive as both WO '647 and the instant invention disclose the same precious catalyst and therefore possesses the same properties.

Applicant argues that WO '647 always has oxidation catalyst before the NO<sub>x</sub> absorber and do not contain any PGMS. Such contention is not persuasive as WO '647 discloses that the NO<sub>x</sub> absorber further comprises precious metal (page 4, line 1) and therefore both absorbent and catalysts are positioned at the same location.

Applicant argues that the instant system is not limited in function to only a NO oxidation catalyst as that in WO '647. Such contention is not persuasive as the language of the instant claim does not preclude such catalyst.

Applicant argues that WO '647 generates NO<sub>x</sub> absorbent by fuel introduction, not by A/F ratio as in instant invention. Such contention is not persuasive as the language of the instant claim is not commensurate in scope with such argument.

Applicant argues that the system of WO '647 is different from that of the instant claims, e.g. the oxidation catalyst of the three unit system is different from the TWC in the system of WO '647. Such contention is not persuasive as the instant claims do not recite any structural elements to distinguish the system of the instant invention from that of the WO '647. Note that the catalyst of WO '647 is the same as the catalyst of the instant claim and therefore possesses the same properties.



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***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Hien Tran*

**Hien Tran  
Primary Examiner  
Art Unit 1764**

HT  
July 23, 2004